PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 030283WO	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/US04/23694	International filing date *(day/month/year)* 23 July 2004 (23.07.2004)	Priority date *(day/month/year)* 23 July 2003 (23.07.2003)
International Patent Classification (IPC) or national classification and IPC IPC(7): G08G 1/16; H04B 7/185 and US Cl.: 370/336; 701/213, 301; 342/357.06, 357; 455/423,456		
Applicant QUALCOMM INCORPORATED		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☐ *(sent to the applicant and to the International Bureau)* a total of ___ sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
   - ☒ Box No. I Basis of the report
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
27 January 2005 (27.01.2005)	18 July 2005 (18.07.2005)
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Afsar M. Qureshi Telephone No. (571) 272 3178

Form PCT/IPEA/409 (cover sheet)(January 2004)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US04/23694

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1(b))

☐ publication of the international application (under Rule 12.4)

☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☒ the international application as originally filed/furnished

☒ the description:
pages 1-16 as originally filed/furnished
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☒ the claims:
pages 17-28 as originally filed/furnished
pages* NONE as amended (together with any statement) under Article 19
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☒ the drawings:
pages 1-5 as originally filed/furnished
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

☒ the description, pages None
☒ the claims, Nos. None
☒ the drawings, sheets/figs None
☒ the sequence listing (*specify*): None
☒ any table(s) related to the sequence listing (*specify*): None

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing (*specify*): _____
☐ any table(s) related to the sequence listing (*specify*): _____

** If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US04/23694

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-101	YES
	Claims NONE	NO
Inventive Step (IS)	Claims 29-72, 76, 82-89, 96-99	YES
	Claims 1-28, 73-75, 77-81, 90-95, 100-101	NO
Industrial Applicability (IA)	Claims 1-101	YES
	Claims NONE	NO

2. Citations and Explanations (Rule 70.7)
Please See Continuation Sheet

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

1. Claims 1-28, 73-75, 77-81, 90-95,100 and 101 lack an inventive step under PCT Article 33(3) as being obvious over Us 5,982,324 (WATTERS et al.) in view of US 6,289,280 B1 (Fernandez-Corbaton et al., "Fernandez" hereinafter).

Claims 1-28, 100 and 101. **Watters discloses Global Positioning System (GPS) technology and method of determining geographic position of a remote terminal in wireless communication system (see Abstract). Measurements are based on non-network** complemented with network measurements in the case of bad geometry.

Watters discloses, in reference to figure 4, a method of determining first and second sets of positions of mobile telephone unit based on TOA/TDOA, using pseudorange measurements of the reference stations depending on the geographic nature of the coverage area (see BACKGROUND on col. 3, lines 41-62), unit fault measurements; initial position measurements etc. (see col. 2, lines 14-38).

Watters further discloses that a combination of GPS satellite signals and the pseudosatellite signals are utilized to calculate position of the terminal (col. 17, lines 64-67), weighting technique is used to combine the results (see col. 23, lines 10-15). Watters does not specifically disclose method of measuring position data based on pilot phase, angle of arrival etc. However, Fernandez discloses detailed method for determining geographic position of remote unit and selecting between the various positions based on a predetermined selection criteria (see col. 6, lines 42-53 and col. 7, lines 24-34), the position data including, pilot phase measurement (see col. 3, lines 20-39); angle of arrival measurements; time of arrival measurements; time difference of arrival measurements; altitude and round trip delay measurements (see col. 2, lines 60 through col. 3 up to line 39 and (see col. 3, lines 15-47).

As discussed above the cited references use GPS, the remote unit is a mobile station (see figure 3).

Therefore it would have been obvious to one of ordinary skill in the art, at the time of invention to be able to utilize method of determining algebraic solution to GPS terrestrial location, as disclosed by Fernandez, and modify the invention by Watters accordingly, as expressed by Watters in col. 16, lines 22-30. The modification would enable, one of skill in the art, to solve the location system equations in scenarios where a non-iterative solution is desirable.

Claims 73-75, 90, 91. In reference to figure 7, Watters discloses a GPS receiver 750 receiving satellite signals by the GPS antenna 755 from the satellites and calculates the pseudoranges of each of the GPS satellites and the results are forwarded to DGPS processor 675 (see col. 13, lines 1-47).

Claims 77-81, 92. All the limitations are already discussed in claims 3-6 above.

Claims 93 - 95. As discussed above (claims 1-28), one aspect of the invention, Watters discloses a base station implementing position location (see col. 8, lines 65-67, figure 4A, also, col. 13, lines 55-67).

Similarly, in an alternative embodiment, Watters discloses position determination device included in the mobile terminal (remote unit), see figure 7.

Supplemental Box

2. Claims 29-72, 76, 82 - 89, and 96 - 99 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a method step of selecting a desired final position solution of the remote unit based on respective figures of merit of the desired prefix position solution and the final-fix position solution and the estimated errors of the position solution (claims 29, 59 and 96).

Claims 76, 82-89 claim the method step of generating data using an advanced forward link trilateration covariance matrix, not disclosed by the cited art of record.

---------- NEW CITATIONS ----------